

SUPPORT FOR THE AMENDMENTS

Support for the amendment of Claim 1 is found on page 3, lines 1-8, in the specification. Claim 1 is further amended to use structure and wording consistent with U.S. patent law practice and to more clearly describe the present invention.

Claims 2 and 3 are amended to use description consistent with Claim 1.

Claim 9 is canceled.

No new matter is believed added to this application by entry of this amendment.

Upon entry of this amendment, Claims 1-3, 5-8 and 11 to 15 are active. Claims 5-8 and 11-13 are withdrawn.

REMARKS/ARGUMENTS

The claimed invention provides an aqueous paper size composition according to Claim 1 and claims dependent thereon, which produces paper sizing performance improvement as indicated by lower Cobb values and longer ink flotation time when compared to conventional paper sizes.

As indicated in the attached articles (Sizing, Wikipedia; Sizing Agents, Mini-Encyclopedia of Papermaking Wet-End Chemistry), paper sizing agents are applied to the paper web to provide a water repellant surface, improve surface strength and to improve printability of the paper.

Applicants wish to thank Examiner Mulcahy for the useful and courteous discussion of this application with Applicants' U.S. representative on February 18, 2009. At that time, Applicants U.S. representative reviewed the examples and results provided in the specification and showed that the cited reference does not disclose or suggest the improved performance with regard to Cobb value and ink flotation time obtained according to the

claimed invention. The scope of patent protection afforded by the claims was reviewed and discussed. The following reiterates and expands upon that discussion.

Applicants respectfully note that Claim 1 is herein amended to describe that the dispersed polymer particles of the claimed paper size composition consist of 50 to 99% styrene and/or methylstyrene, 1 to 50% 1,3-butadiene and/or isoprene and from 0 to 40% by weight of other ethylenically unsaturated copolymerizable monomers. this composition is supported in lines 1 to 8 on page 3 of the specification.

Applicants have shown significant improvement in performance properties (Cobb value and ink flotation time) due to the claimed paper sizing composition of the present invention in the table on page 15 of the specification. The table is again reproduced below for the Examiner's convenience.

Size prepared according to	Cobb / g/m ²	Ink flotation time / min.
Example 1	27	35
Example 2	33	35
Comparative example 1	92	0
Comparative example 2	106	0
Comparative example 3	48	7
Comparative example 4	40	12
Comparative example 5	55	4

Applicants particularly note that the copolymer components in each example are as indicated below:

Example	Monomer 1	Monomer 2	Monomer 3	Monomer 4
Inv. 1	Styrene	Butadiene		
Inv. 2	Styrene	Butadiene	Terpinolene	
Comp. 1	Styrene	n-Butyl-acrylate	Acrylic acid	Trimethylammonium-ethylmethacrylate
Comp. 2	Styrene	n-Butyl-acrylate	Acrylic acid	Trimethylammonium-ethylmethacrylate

Comp 3.	Acrylonitrile	n-Butyl acrylate		
Comp. 4	Styrene	n-Butyl acrylate	t-Butyl acrylate	
Comp. 5	Styrene	n-Butyl acrylate		

The data above show that the claimed composition provides significant improvement over the conventional comparative compositions of comparative examples 1-5.

The rejection of Claims 1-3, 9, 14 and 15 under 35 U.S.C. 103 (a) over Giesecke et al. (U.S. 6,489,382) is respectfully traversed.

Giesecke describes a water-dispersible graft copolymer built up from at least one hydrophobic, ethylenically unsaturated monomer, optionally one or more ethylenically unsaturated hydrophilic monomers, and at least one natural protective colloid or protective colloid obtained from a natural protective colloid by derivatization or thermal, enzymatic, oxidative, hydrolytic or bacteriological degradation having an average molar mass of $M_n > 500$ g/mol. (Claim 1).

In Column 6, lines 47-59, Giesecke lists 29 exemplary hydrophobic ethylenically unsaturated monomers from a wide range of possible monomers, suitable as component 1) of graft polymer b). This list includes styrene, acrylonitrile, butadiene, n-butyl acrylate and t-butyl acrylate. At Col. 6, lines 36-37, this reference describes that 1) is built up of "one or more ethylenically unsaturated, hydrophobic monomers." However, Applicants respectfully submit that nowhere does Giesecke disclose or suggest that significant improvement in Cobb value and ink flotation time would be obtained in paper sized with a sizing composition containing dispersed polymer particles having styrene and/or methylstyrene combined with 1,3-butadiene and/or isoprene.

Giesecke describes copolymers of styrene/n-butyl acrylate/t-butyl acrylate and styrene/n-butyl acrylate/acrylic acid in Examples 1 and 8 respectively. Applicants

respectfully note that these examples are similar to Comp. Example 4 above. Nowhere does this reference provide motivation that would have led one of ordinary skill in the art at the time of the present invention, to expect significant improvement in sizing performance would be obtained by the composition according to the claimed invention.

Applicants respectfully submit that Giesecke is directed to a preparation of a pigment, water-insoluble dye or brightener particle (Col. 2, lines 27-29) which is surface treated with the water-dispersible graft copolymer. The compositions obtained in this manner are optionally mixed with other additives and dried to form solid compositions (Col. 23, lines 3-24) notable for compatibility with hydrophobic media, especially organic hydrophobic media (Col. 24, lines 5-8). Therefore, this reference provides no motivation or suggestion for paper sizing. The Office has cited (Official Action dated December 4, 2008, page 3, lines 8-9) the description in Col. 1, lines 11+ to suggest that the cited reference recites paper coating applications.

Applicants respectfully submit that the coating applications described by Giesecke are pigmented coatings for the coloration of the substrate, not for use as sizing agents as defined earlier in these remarks and supported by the attached articles. Moreover, Giesecke is silent with regard to particle size and the Office alleges that the polymerization process disclosed in the reference is understood to produce polymer particles. Stating that the “particle sizes claimed are conventional and obtainable with the use of the colloids and surfactants disclosed within the patent” (page 3, lines 7-10), the Examiner appears to equate obtaining the required particle size to a result of routine experimentation.

However, Applicants again respectfully point out that in order for a parameter to be the result of routine experimentation, it must be recognized as a result effective variable. (*In re Antonie*, 195 USPQ 6 (CCPA 1977)) Applicants respectfully submit that as Giesecke is directed to a coating composition, not a paper size, the cited reference does not pertain to the

same field of endeavor as the claimed invention, does not deal with the same problem as the claimed invention and is directed to an art nonanalogous to the art of the claimed invention.

Therefore, the cited reference can provide no guidance relative to particle size of a paper sizing agent. As the Giesecke material is intended to be isolated and dried, particle size is not a result effective variable in this pigment dispersion technology. The Examiner has not explained how or why the description in Giesecke would have led a person having ordinary skill in the art to the subject matter claimed.

In a Precedential Opinion rendered by the Board of Patent Appeals and Interferences in *Ex parte Whalen II* (Appeal 2007-4423, Application 10/281,142) on July 23, 2008, the Board stated:

“The KSR Court noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some “apparent reason to combine the known elements in the fashion claimed.””

Applicants respectfully submit that the cited reference does not describe an aqueous paper size composition consisting of the components recited in Claim 1 nor does it disclose or suggest either the combination of monomers or the particle size according to the claimed invention. Furthermore, an explanation of why or how the cited reference would have motivated one of ordinary skill in the art at the time of the invention to invent the claimed subject matter, starting with the description of Giesecke has not been provided.

Accordingly, Applicants respectfully submit that according to the guidelines above, a conclusion of obviousness cannot be supported. The cited reference does not disclose or suggest all the elements of the claimed invention, does not provide motivation to change the description of the reference to arrive at the claimed invention and reasonably would not have suggested the results obtained in terms of paper size performance obtained according to the claimed invention.

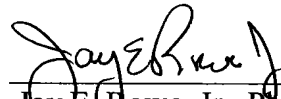
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In view of the above, Applicants respectfully request withdrawal of the rejection of Claims 1-3, 9, 14 and 15 under 35 U.S.C. 103 (a) over Giesecke.

Applicants respectfully submit that the above-identified application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

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